

Remarks

Claims 1-85 are currently pending in the Application. Claims 3, 7-11, 14-17, 19-22, 25, 29-33, 36-39, 41-44, 47, 51-55, 58-61, 63, 73-77 and 82-85 are withdrawn. Claims 12, 34, 56 are cancelled. Claims 1, 2, 4-6, 13, 18, 23, 24, 26-28, 35, 40, 45, 46, 48-50, 57, 62, 64-72 and 78-81 are rejected.

Claims 1, 2, 4, 18, 23, 24, 26, 40, 45, 46, 48, 62, 66 are rejected under 35USC103(a):

The Examiner withdrew the previously allowed objected to claims over a new reference, specifically that the distinguishing limitation of counting the number of cycles in the receiver to indicate the state of the digital data is found in Toman. The Examiner takes the gating functions described in Toman's transmitter and imports them into Gerdes receiver. See Examiner's analysis last paragraph page 3.

Applicant respectfully disagrees. The Examiner's rejection is improper because not every limitation of the claims is taught or suggested. Specifically Toman does not describe a receiver nor does it describe counting cycles. In addition, the cited motivation for combining references only provides motivation for Toman's dual carrier waves, not for combining Toman with Gerdes let alone for counting cycles in a receiver. Finally, the Examiner is impermissibly using Applicant's specification as a roadmap to pick and choose limitations from the prior art to reconstruct Applicant's invention.

Fundamentally, Toman does not teach encoding digital data in the duration of the carrier wave. Toman teaches encoding the quantized amplitude of a modulation wave generator 52 into a duration 61 for the carrier wave 17. See Toman col 3 lines 48:67. It is the duration of Toman's carrier that represents the amplitude of the 90Hz or 150Hz signal. These are not digital data which implies two states (one and zero). This is quantized analog data expressed in the duration of the carrier. By contrast, claim 1 calls for "a transmitter transmitting one or more digitally gated carrier waves gated by said digital data" (defined as ones and zeroes in the specification page 11 lines 4:15 and figure 5).

The Examiner asserts “it is well known in the art that demodulation occurs in the receiving section of a system” and “it would be obvious to one of ordinary skill in the art that a carrier wave be detected before demodulation”. That may be but the claim element calls for “detecting at least one digitally gated carrier wave”. Where does the Examiner find the claimed limitation? The Examiner’s reliance on the “ordinary skill in the art” does not supply all the limitations of claim 1, particularly the “detecting at least one digitally gated carrier wave”.

Toman’s figures and specification are directed to a transmitter while claim 1 of the present invention requires “a receiver detecting at least one digitally gated carrier wave”. Toman teaches gating a carrier wave for a specified time. Nowhere does Toman teach “said receiver *determines* a state of said digital data by *counting* cycles of the at least one digitally gated carrier wave of the one or more digitally gated carrier waves” (italics added). While one may argue Toman teaches gating a carrier wave to encode digital data on the transmitter side, there is no teaching in Toman on how to “determine a state of digital data by counting cycles” in the carrier wave on the receiver side, particularly from the absence of cycles.

Where is the teaching of “said *receiver* comprising digital counting circuitry counting the number of cycles present in and counting the number of cycles absent from said at least one digitally gated carrier wave” (emphasis added)? The counters 10, 12, 14 in Toman’s figure 1 set the duration of the carrier wave according to the amplitude of the generator 52 and the Morse code generator 48 in the transmitter. Could one take the counters 10, 12 14 and generators 52 and 48 and build a receiver per Applicant’s claim1? Not hardly, there is nothing in Toman teaching the absence of a number of cycles indicating a second state of digital data, contrary to the Examiner’s analysis.

The Examiner points to Toman’s fixed intervals 85, 85A for a first state of digital data and the off period 88 in figure 2 for a second state of digital data in localizer signal 81. What does figure 2, and in particular intervals 85, 85A and 88 teach a person skilled in the art? According to Toman’s figure 1, register 14 sets the minimum duration (col 7 lines 42:45) of the localizer signal 81. This is seen in the hardwired count value in

register 14 and in the description for 85 as a “fixed interval” col 7 line 45. Registers 10 and 12 set the duration 86 of the carrier 16 col 7 lines 48:51. Do these intervals indicate a first state of digital data or a second state of digital data? Neither actually. According to Toman in col 2 lines 60:65 the registers 10, 12 and 14 only set the duration of carrier energy. The variable interval 86 contains the information in its duration. None of this in Toman equates to “said at least one digitally gated carrier wave indicates a first state of said digital data and the absence of a specified number of cycles in said at least one digitally gated carrier wave indicates a second state of said digital data”. The Examiner seems to be reading figure 2 in light of applicant’s claims without taking into account the teachings of Toman in the text. The result is the Examiner is inferring Toman teaches applicant’s claims when in fact it does not.

The Examiner cites Toman’s col 1 line 43:46 for the motivation to combine Toman and Gerdes as to provide a more economical apparatus for generating two different modulated carrier waves. The Examiner has correctly cited the passage in Toman for Toman’s motivation. But Toman only suggests why Toman made his invention – to generate two carriers modulated by one signal. The requirement from *KSR v. Teleflex* is for the Examiner to explain the motivation to combine Toman and Gerdes with a reasonable expectation of success of achieving the claimed invention – why would one combine Toman (a one-way communication channel) with Gerdes (modulating a carrier with a third harmonic to encode data on a tape recorder)?¹

¹ *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 82 USPQ2d 1385, 1396 (2007) Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit. See *In re Kahn*, 441 F. 3d 977, 988 (CA Fed. 2006).

The Examiner's analysis in item 2 of the NFOA of 16 March 2009 lists some element of claim 1 and for each element lists a reference in Gerdes. The Examiner finds a transmitter in Gerdes col 2 lines 52:57, a receiver in col 2 lines 64:66, counting cycles in col 1 lines 58:62. The Examiner goes on to find digital gating in Toman's col 2 lines 24:29.

The Examiner is engaged in impermissible hindsight reconstruction of Applicant's claims.² Although this point was addressed in Applicant's response to the Office Action mailed 17 March 2008, filed 17 June 2008, the Examiner's catalog of elements is handy format for a concise refutation.

The Examiner sees in Gerdes col 2 line 52-57 a transmitter. This is wrong. The referenced lines discuss a modulated carrier signal, not a transmitter. One would read into Gerdes only carrier modulation for recording on magnetic tape rather than a transmitter, at least based on the last sentence of the abstract.

The Examiner sees a receiver in Gerdes col 2 lines 64:66 where Gerdes only describes demodulation of a carrier signal by differentiation ("Demodulation of the modulated carrier signal, ... , is differentiated by a differentiating circuit..."). While a receiver may use demodulation, the presence of demodulation does not necessarily imply a receiver. Claim 1 requires more than demodulation. Claim 1 states: "said receiver

² *In re Fritch*, 972 F.2d 1260, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992)

It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that "[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." (quoting *In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988)).

determines a state of said digital data by counting cycles of the at least one digitally gated carrier wave”. Differentiation is not counting cycles.

The last sentence of the first paragraph of page 3 of the Examiner’s analysis states in part “it would be obvious to one of ordinary skill in the art that a carrier wave be detected before demodulation”. This is counter to applicant’s invention and claims. Applicant’s invention requires “counting the number of cycles absent from said at least one digitally gated carrier wave.” If cycles are absent from a carrier wave where is the signal to be detected? Without a signal to detect, there is no demodulation as understood by Examiner’s person of ordinary skill in the art. This contradiction shows the person of ordinary skill in the art would not invent applicant’s invention based on the teachings of Gerdes.

The Examiner sees a receiver determining a state of digital data by counting cycles in Gerdes col 1 lines 58:62. This is wrong. This section of Gerdes only expresses the desirability of encoding a carrier signal so that every half cycle contains information representative of the logic states of a plurality of digital bits. The cited passage of Gerdes is only a general statement. It does not specify amplitude modulation, frequency modulation, phase shift modulation or any other technique. But most importantly, there is no counting of cycles as required by the claim 1. The Examiner attempts to fill in this gap with the inclusion of Toman discussed earlier.

Missing from the Examiner’s catalog is the claimed limitation of a “digitally gated carrier waves”. Gerdes col 2 lines 39:44 says the carrier signal is gated by an “analog switch”. Claim 1 requires “counting the number of cycles present” and “counting the number of cycles absent”. This limitation is not in Gerdes as stated by the Examiner in the Non Final Office Action of 16 March 2009.

This brief recitation of claim 1’s elements and their lack of correspondence with Gerdes and Toman shows the cited references do not teach each and every limitation of the claim as a way to illustrate the Examiner’s using the Applicant’s claims as a template to reconstruct the claimed invention.

Re claim 2.

The Examiner cites Gerdes and Toman for teaching a communication system operating in free space at frequencies from less than microwave to millimeter wave. However Gerdes' carrier waves are in the kilohertz range col 21 lines 12 and 35. The Examiner's combination of Gerdes and Toman suggests that a system like Gerdes designed to operate in the kilohertz range is combinable with Toman designed to operate in the microwave range. The Applicant traverses this combination and requests the Examiner identify the teaching in Gerdes that shows it is operable at the microwave frequencies of Toman.

It is well known a rejection based on combination of references is improper when the references are inoperable when combined.

Claim 2 is allowable because the combination of Gerdes and Toman is improper and because claim 1 is allowable.

Claim 4, 18, 23 are allowable in so far as parent claim 1 is allowable.

Claims 24, 26, 40, 45, 46, 48, 62, and 66 are allowable for the same reasons as for claims 1 and 2.

Regarding Claims 5, 27, and 49:

Claim 5, 27 and 49 are rejected under 35USC103(a) as being unpatentable over Gerdes et al (US4989219) and Toman 4037173) in view of Yousefi et all (US6957078).

Dependent claims 5, 27 and 49 are allowable as the claimed limitations in the corresponding independent claims are allowable.

In view of the above differences between dependent claim 5, 27 and 49 of the present application and the novelty of independent parent claims 1, 23 and 45 the Applicant respectfully requests the rejection based on 35USC103(a) be withdrawn.

Regarding Claim 6, 28 and 50:

Claim 6, 28 and 50 are rejected under 35USC103(a) as being unpatentable over Gerdes et al, Toman and Yousefi et al in view of Staszewski et al (US20020186782)

Claims 6, 28, and 50 are allowable as the claimed limitations in the corresponding independent claims are allowable.

In view of the novelty of independent parent claims 1, 23 and 45 the Applicant respectfully requests the rejection based on 35USC103(a) be withdrawn.

Regarding Claims 13, 35 and 57:

Claims 13, 35 and 57 are rejected under 103(a) as being unpatentable over Gerdes and Toman in view of Mohindra (US6922555).

The Examiner cites Mohindra for the “digital signal processor” of claim 13. Yet Mohindra col 4 line 57 to col 5 line 8 and the equations describes the demodulator 11 in figure 1 with outputs a function of the change in carrier phase. Nothing in Mohindra shows or suggests a “digital signal processor” as required by claim 13.

In view of the differences between claim 13 and the cited reference and the novelty of independent parent claims 1, the Applicant respectfully requests the rejection of claim 13 based on 35USC103(a) be withdrawn.

In view of the novelty of parent claim 13, the Applicant respectfully requests the rejection of dependent claims 35 and 57 based on 35USC103(a) be withdrawn.

Regarding Claim 64

Claim 64 is rejected under 35USC103(a) as being unpatentable over Gerdes et al and Toman in view of White et al (US20010005145). Claim 64 adds a limitation to the system and in particular the receiver to operate at radio frequencies.

The Examiner identifies the motivation to combine Gerdes, Toman and White as to improve testability of a circuit. A prima facie case of obviousness, with improvement of an existing device providing the motivation, requires the Examiner to articulate the

rationale for combining, the components combined (with no change in their respective function) and that the result was predictable. Applicant respectfully contends the examiner is impermissibly combining references because combining the receiver of White with Gerdes and Toman will not result in a device that meets the claimed elements. Figure 9 of White supposedly describes a structure for receiving electromagnetic radiation but the structure presented will only provide an average value of the input received signal whereas the present invention requires “means for counting the number of cycles”. An average value is inconsistent with counting cycles. Hence White does not provide an element that will operate in the claimed invention.

In view of the missing articulation of reasons for combining references consistent with the cited motivation, and the unsuitability of White’s receiver to support counting cycles, the Examiner has not made a prima facie case of obviousness. Moreover, the novelty of independent parent claim 45, as discussed above under claim 1 implies dependent claim 64 is not obvious. The Applicant respectfully requests the rejection based on 35USC103(a) be withdrawn.

Regarding Claim 65

Claim 65 is rejected under 35USC103(a) as being unpatentable over Gerdes et al and Toman in view of MacLellan (US6456668). Claim 65 adds a diode detector limitation.

In view of the novelty of parent claim 45, the Applicant respectfully requests the rejection of dependent claim 65 based on 35USC103(a) be withdrawn.

Regarding Claims 67 and 78:

Claims 67 and 78 are rejected under 35USC103(a) as being unpatentable over Luhman et al (US20040223557) in view of Ainsworth (US5245630)

The Examiner equates the gating circuit called out in claims 67 and 78 with the buffer 120 in figure 9 (paragraph 45 – 51) of Luhman. Claims 67 and 78 requires the gating circuit to gate at least one carrier signal according to each digital bit. The

Examiner has not identified the prior art in Luhman that performs the “gating at least one carrier signal”. The Examiner may argue this gating function may be equated to variable gain unit 110 in figure 9 per paragraph 51 of Luhman. However the modulation in Luhman does not satisfy the claim limitation of gating according to **each** digital bit (emphasis added). Luhman amplifies the carrier (output of converter 108) according to a two bit pattern b2b1 seen on the data outputs of flip-flops 116 and 118. The claimed limitation requires gating according to a one bit pattern and only a one bit pattern (as required by the inclusion of **each** in the claim), not a pair of bits.

Luhman’s amplification of the carrier signal is not comparable to the gating of the present invention. In Luhman, the output amplitude is modulated per the two bit pattern b2b1 (figure 10 and paragraph 51). According to Luhman, the output is either not amplified, or amplified by a first, second or third amount – but the output is always present. An always present output is not comparable to gating. Gating requires the output to be either present or absent, not taking a range of values.

The Examiner may argue that one skilled in the art would modify Luhman to amplify the output of converter 108 to accomplish gating according to each digital bit. However, that would teach away from Luhman which is directed to modulating a carrier to encode a more than one bit of data (paragraph 3). If the Examiner offers this argument, the Applicant requests where one skilled in the art would find the teaching, suggestion, or motivation to modify Luhman so it does not perform its intended function.

Because the Examiner has not identified every claimed limitation in the references the Examiner has not made a prima facie case of obviousness.

In view of the above differences between independent claims 67 and 78 of the present application and the disclosure in Luhman, the Applicant respectfully requests the rejection based on 35USC103(a) be withdrawn.

Regarding Claims 68, 69, and 79

Claims 68, 69, and 79 are rejected under 35USC103(a) as being unpatentable over Luhman et al (US20040223557) and Ainsworth (US5245630) in view of Cheng (US4789838)

The claimed limitations in claims 68, 69 and 79 have been analyzed with respect to claims 67 and 78. In view of the non-obviousness of claims 67 and 78, the Applicant respectfully requests the rejection to claims 68, 69 and 79 based on 35USC103(a) be withdrawn.

Regarding Claims 70-72, 80 and 81:

Claims 70-72, 80 and 81 are rejected under 35USC103(a) as being unpatentable over Luhman et al (US20040223557) and Ainsworth (US5245630) in view of Toman (US4037173).

The claimed limitations in claims 70-72, 80 and 81 have been analyzed with respect to claims 67 and 78. In view of the non-obviousness of claims 67 and 78, the Applicant respectfully requests the rejection to claims 70-72, 80 and 81 based on 35USC103(a) be withdrawn.

Conclusion

In view of the Examiner's failure to establish a prima facie case of obviousness as described above, reconsideration and allowance of all claims not cancelled or withdrawn is respectfully requested.

The Commissioner is authorized to charge any additional fees which may be required or credit overpayment to deposit account no. 50-3984. In particular, if this response is not timely filed, then the Commissioner is authorized to treat this response as including a petition to extend the time period pursuant to 37 CFR 1.136(a) requesting an extension of time of the number of months necessary to make this response timely filed and the petition fee due in connection therewith may be charged to deposit account no. 50-3984.

Respectfully submitted,

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